615776

N91-15022

Carbon Stars With alpha-C:H Emission

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Abstract

Many carbon stars in the IRAS LRS catalog have been found which display emission spectra that compare favorably with the absorption spectrum of alpha-C:H. These stars have largely been classified as 4X in the LRS which has led to their interpretation by others (e. g., Willems and Papoular) in terms of displaying a mixture of the UIRF's 8.6 micron band and SiC at 11.5 microns. We also find that many of these stars have a spectral upturn at 20+ microns which resembles the MgS band seen in carbon stars and planetary nebulae. We conclude that this group of carbon stars will evolve into planetary nebulae like NGC 7027 and IC 418. In the presence of hard ultraviolet radiation the UIRFs will light up and be displayed as narrow emission bands on top of the broad alpha-C:H emission bands.